

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on May 13, 2008 by Friedman & Bruya, Inc. from the Alaskan Copper Works Stormwater, PO M119514, F&BI 805102 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>Alaskan Copper Works</u>
805102-01	M119514 A
805102-02	M119514 B
805102-03	M119514 C
805102-04	M119514 D

Sample M119514A was sent to Aquatic Research for oil and grease analysis. In addition, sample M119514C was sent to Aquatic Research for hardness analysis. Review of the enclosed report indicates that all quality assurance was acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 05/19/08

Date Received: 05/13/08

Project: Stormwater, PO M119514, F&BI 805102

Date Analyzed: 05/14/08

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR pH
USING EPA METHOD 9040C**

Sample ID

Laboratory ID

pH

M119514 D

805102-04

7.27

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 05/19/08

Date Received: 05/13/08

Project: Stormwater, PO M119514, F&BI 805102

Date Analyzed: 05/14/08

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES
FOR TURBIDITY
USING METHOD SM2130B
Results Reported as NTU**

<u>Sample ID</u> Laboratory ID	<u>Date Sampled</u>	<u>Time Sampled</u>	<u>Turbidity</u>
M119514 A 805102-01	05/13/08	1245	22.5
Method Blank			<0.5

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID: M119514 B
Date Received: 05/13/08
Date Extracted: 05/14/08
Date Analyzed: 05/14/08
Matrix: Water
Units: ug/L (ppb)

Client: Alaskan Copper Works
Project: Stormwater, PO M119514
Lab ID: 805102-02
Data File: 805102-02.024
Instrument: ICPMS1
Operator: hr

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Germanium	105	60	125
Holmium	105	60	125

Analyte:	Concentration ug/L (ppb)
Copper	241
Zinc	706
Lead	15.4

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID: M119514 C
Date Received: 05/13/08
Date Extracted: 05/14/08
Date Analyzed: 05/14/08
Matrix: Water
Units: ug/L (ppb)

Client: Alaskan Copper Works
Project: Stormwater, PO M119514
Lab ID: 805102-03
Data File: 805102-03.025
Instrument: ICPMS1
Operator: hr

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Germanium	106	60	125
Holmium	101	60	125

Analyte:	Concentration ug/L (ppb)
Copper	284
Zinc	682
Lead	17.7

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	Alaskan Copper Works
Date Received:	NA	Project:	Stormwater, PO M119514
Date Extracted:	05/14/08	Lab ID:	I8-175 mb
Date Analyzed:	05/14/08	Data File:	I8-175 mb.019
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	hr

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Germanium	104	60	125
Holmium	103	60	125

Analyte:	Concentration ug/L (ppb)
Copper	<1
Zinc	<1
Lead	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 05/19/08

Date Received: 05/13/08

Project: Stormwater, PO M119514, F&BI 805102

**QUALITY ASSURANCE RESULTS
FROM THE ANALYSIS OF WATER SAMPLES
FOR pH BY METHOD 9040C**

Laboratory Code: 805102-04 (Duplicate)

Analyte	Sample Result	Duplicate Result	Relative Percent Difference	Acceptance Criteria
pH	7.27	7.38	2	0-20

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 05/19/08

Date Received: 05/13/08

Project: Stormwater, PO M119514, F&BI 805102

**QUALITY ASSURANCE RESULTS
FROM THE ANALYSIS OF WATER SAMPLES FOR TURBIDITY
USING METHOD SM2130B**

Laboratory Code: 805102-04 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	Relative Percent Difference	Acceptance Criteria
Turbidity	NTU	22.5	21.4	5	0-20

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 05/19/08

Date Received: 05/13/08

Project: Stormwater, PO M119514, F&BI 805102

**QUALITY ASSURANCE RESULTS
FOR THE ANALYSIS OF WATER SAMPLES
FOR TOTAL METALS USING EPA METHOD 200.8**

Laboratory Code: 805103-08 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	Relative Percent Difference	Acceptance Criteria
Copper	ug/L (ppb)	13.0	13.3	2	0-20
Zinc	ug/L (ppb)	64.6	63.6	2	0-20
Lead	ug/L (ppb)	4.50	4.27	5	0-20

Laboratory Code: 805103-08 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Acceptance Criteria
Copper	ug/L (ppb)	20	13.0	83 b	50-150
Zinc	ug/L (ppb)	50	64.6	69 b	50-150
Lead	ug/L (ppb)	10	4.50	91 b	50-150

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Copper	ug/L (ppb)	20	98	70-130
Zinc	ug/L (ppb)	50	82	70-130
Lead	ug/L (ppb)	10	105	70-130

Data Qualifiers & Definitions

- a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- A1 - More than one compound of similar molecule structure was identified with equal probability.
- b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca - The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.
- c - The presence of the analyte indicated may be due to carryover from previous sample injections.
- d - The sample was diluted. Detection limits may be raised due to dilution.
- ds - The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.
- dv - Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.
- fb - The analyte indicated was found in the method blank. The result should be considered an estimate.
- fc - The compound is a common laboratory and field contaminant.
- hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.
- ht - The sample was extracted outside of holding time. Results should be considered estimates.
- ip - Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.
- j - The result is below normal reporting limits. The value reported is an estimate.
- J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- jl - The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.
- jr - The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- lc - The presence of the compound indicated is likely due to laboratory contamination.
- L - The reported concentration was generated from a library search.
- nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc - The sample was received in a container not approved by the method. The value reported should be considered an estimate.
- pr - The sample was received with incorrect preservation. The value reported should be considered an estimate.
- ve - The value reported exceeded the calibration range established for the analyte. The reported concentration should be considered an estimate.
- vo - The value reported fell outside the control limits established for this analyte.
- x - The pattern of peaks present is not indicative of diesel.
- y - The pattern of peaks present is not indicative of motor oil.



AQUATIC RESEARCH INCORPORATED
LABORATORY & CONSULTING SERVICES
 3927 AURORA AVENUE NORTH, SEATTLE, WA 98103
 PHONE: (206) 632-2715 FAX: (206) 632-2417

CASE FILE NUMBER:	FBI002-53	PAGE 1
REPORT DATE:	05/17/08	
DATE SAMPLED:	05/13/08	DATE RECEIVED: 05/14/08
FINAL REPORT, LABORATORY ANALYSIS OF SELECTED PARAMETERS ON WATER		
SAMPLES FROM FRIEDMAN & BRUYA, INC. / PROJECT NO. 805102		

CASE NARRATIVE

Two water samples were received by the laboratory in good condition. Analysis was performed according to the chain of custody received with the samples. No difficulties were encountered in the preparation or analysis of these samples. Sample data follows while QA/QC data is contained on the following page.

SAMPLE DATA

SAMPLE ID	FOG (mg/l)	HARDNESS (mgCaCO ₃ /l)
M119514A	9.42	
M119514C		40.8



AQUATIC RESEARCH INCORPORATED
LABORATORY & CONSULTING SERVICES
 3927 AURORA AVENUE NORTH, SEATTLE, WA 98103
 PHONE: (206) 632-2715 FAX: (206) 632-2417

CASE FILE NUMBER:	FBI002-53	PAGE 2
REPORT DATE:	05/17/08	
DATE SAMPLED:	05/13/08	DATE RECEIVED: 05/14/08
FINAL REPORT, LABORATORY ANALYSIS OF SELECTED PARAMETERS ON WATER		
SAMPLES FROM FRIEDMAN & BRUYA, INC. / PROJECT NO. 805102		

QA/QC DATA

QC PARAMETER	FOG (mg/l)	HARDNESS (mgCaCO ₃ /l)
METHOD	EPA 1664	EPA 130.2
DATE ANALYZED	05/15/08	05/16/08
DETECTION LIMIT	2.00	2.00
DUPLICATE		
SAMPLE ID		BATCH
ORIGINAL		62.5
DUPLICATE		63.5
RPD	NA	1.55%
SPIKE SAMPLE		
SAMPLE ID		BATCH
ORIGINAL		62.5
SPIKED SAMPLE		82.7
SPIKE ADDED		20.0
% RECOVERY	NA	100.65%
QC CHECK		
FOUND	7.30	39.5
TRUE	8.00	40.0
% RECOVERY	91.25%	98.70%
BLANK	<2.00	<2.00

RPD = RELATIVE PERCENT DIFFERENCE.

NA = NOT APPLICABLE OR NOT AVAILABLE.

NC = NOT CALCULABLE DUE TO ONE OR MORE VALUES BEING BELOW THE DETECTION LIMIT.

OR = RECOVERY NOT CALCULABLE DUE TO SPIKE SAMPLE OUT OF RANGE OR SPIKE TOO LOW RELATIVE TO SAMPLE CONCENTRATION.

SUBMITTED BY:

Steven Lazoff
 Laboratory Director

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Charlene Morrow, M.S.
Yelena Aravkina, M.S.
Bradley T. Benson, B.S.
Kurt Johnson, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
TEL: (206) 285-8282
FAX: (206) 283-5044
e-mail: fbi@isomedia.com



May 19, 2008

INVOICE #08ACU0519-1

Accounts Payable
Alaskan Copper Works
628 South Hanford
Seattle, WA 98134

RE: Project Stormwater, PO M119514, F&BI 805102 - Results of testing requested
by Gerry Thompson for material submitted on May 13, 2008.

1 sample analyzed for Turbidity by Method SM214A @ \$22 per sample	\$ 22.00
2 samples analyzed for Total Zn, Cu, and Pb by Method 200.8 @ \$75 per sample	150.00
1 sample analyzed for pH by Method 9050A @ \$25 per sample	25.00
1 sample analyzed for Oil and Grease by Method 1664 @ \$85 per sample	85.00
1 sample analyzed for Hardness by Method SM2340 @ \$35 per sample	<u>35.00</u>
Amount Due	\$ 317.00

805102

SAMPLE CHAIN OF CUSTODY

ME 5/13/08

AI4

Send Report To Gerald Thompson
 Company ALASKAN Copper works
 Address 628 S. Harbor St
 City, State, ZIP Seattle WA 98134
 Phone # 206-571-6033 Fax # 206-382-4309

SAMPLERS (signature)

PROJECT NAME/NO.

STORM WATER

PO #

M119514

REMARKS

Page # of

TURNAROUND TIME

☒ Standard (3 Weeks)☐ RUSH

Rush charges authorized by:

SAMPLE DISPOSAL

☐ Dispose after 30 days☐ Return samples☐ Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	ANALYSES REQUESTED										Notes	
						Oil and Grease by 1664 (no silica)	Total Zinc by 6010	Turbidity by SM241A	pH by 9040A	Nitrate/Nitrite by 853.2	Total Phosphorus by 865.2	BOD by 405.1	Hardness by SM2340B	Total Metals by 6010/6020 (Circle all needed) As, Cr, Cu, Pb, Mn	TSS by SM2540D		
m119514 A	01	5/13/08	12:45	H ₂ O	1	(X)											8-20 GT
m119514 B	02	5/13/08	12:45	H ₂ O	1									X			5/14/08
m119514 C	03	5/13/08	12:45	H ₂ O	1								X	X			Mg
m119514 D	04	5/13/08	12:45	H ₂ O	1				XX								

Samples received at 15°C

Friedman & Bruya, Inc.
 3012 16th Avenue West
 Seattle, WA 98119-2029
 Ph. (206) 285-8282
 Fax (206) 283-5044

FORMS\COC\STORM.DOC

SIGNATURE

Relinquished by:

Received by:

Relinquished by:

Received by:

PRINT NAME

Gerald Thompson

Nhan Phan

COMPANY

ALASKAN Copper

Fe BI

DATE

5/13/08

5/13/08

TIME

2:06pm

2:06

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Charlene Morrow, M.S.
Yelena Aravkina, M.S.
Bradley T. Benson, B.S.
Kurt Johnson, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
TEL: (206) 285-8282
FAX: (206) 283-5044
e-mail: fbi@isomedia.com

May 19, 2008

Gerry Thompson, Project Manager
Alaskan Copper Works
628 South Hanford
Seattle, WA 98134

Dear Mr. Thompson:

Included are the results from the testing of material submitted on May 13, 2008 from the Stormwater, PO M119514, F&BI 805102 project. There are 10 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
ACU0519R.DOC

ALASKAN COPPER WORKS RECORD OF VISUAL MONITORING			Completed By * <u>GERALD A. THOMPSON</u>	
			Title <u>ENVIRONMENTAL ASST.</u>	
			Date <u>5-13-08</u>	
			*Must be completed by qualified person identified in the SWPPP	
List observed pollutants in all discharges and carefully consider the pollutant sources and action steps needed to control the pollutants				
Date	Surface Discharge ID	Ground Discharge ID	List of observed pollutants and descriptions of intensities of each. Include floatables, oil sheen, discolorization, turbidity, odor, etc. in the SW	Recommended Action Steps
5-13-08			No floaters	
			SLIGHTLY Dirty	
			No odor	
			GREATER than 2/10th of an	
			inch of RAIN WATER	

Name GERALD A. THOMPSON Title Enviro. Asst. Signature [Signature] Date Signed 5-13-08